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ROMEROLAGUS NELSONI, A NEW GENUS AND SPECIES
OF RABBIT FROM MT. POPOCATEPETL, MEXICO.

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Among the many new and interesting mammals collected by Mr. E. W. Nelson in Mexico during the past five years, one of the most remarkable is a small, short-eared, tailless rabbit discovered high up on Mt. Popocatepetl, at and above an altitude of 3,000 meters (approximately 10,000 feet). This singular animal has exceedingly short hind legs, and instead of moving by a series of leaps like ordinary rabbits, runs along on all fours, and lives in runways in the grass like the meadow mice.

Mr. Nelson has prepared, at my request, the following account of his experience with this extraordinary animal. He says: "On my first visit to Mt. Popocatepetl in the spring of 1893, I learned that these little rabbits were found there, and on my return to the city of Mexico I prepared for an expedition to secure them. On January 5, 1894, my assistant, Mr. E. A. Goldman, and I made our camp on the side of a cañon at an altitude of about 3,350 meters (11,000 feet) on the northwest slope of the mountain. We were accompanied by three Indian hunters and our packer. Among the firs and alders at this altitude the northerly slopes of the hills and cañons are covered with a luxuriant growth of saccaton grass in huge bunches, from three to six feet across, and often reaching a height of 6 or 8 feet, which covers the ground so that the only open spaces are small spots scattered irregularly here and there. A search under the overhanging masses of long grass blades showed a perfect network of large arvicola-like runways tunneling through the bases of the tus-

socks, and passing from one to another under the shelter of the outcurving masses of leaves. It was evident that the rabbits were very numerous here, and we all proceeded to hunt the vicinity carefully for them. The first day I saw three, but was unable to get a shot at any. One came running through the grass along one of the hidden trails and, seeing me, stopped in a little opening only seven or eight feet away. It was too near to shoot, and so escaped after looking at me with inquiring eyes for a few moments. The next evening I shot one by taking a stand on a large log, whence I could see several small openings in the grass, and saw one as it stopped a moment at the entrance of a runway. By persistent hunting for three days my Indians secured three more.

“On our first night wire snares were set without success, so the next night we put out a lot of steel traps in the runways. This latter method was very successful, and three fine specimens were taken in a small area a few yards across. So far as observed, these animals are strictly limited to the heavy growth of saccaton grass, between about 3,050 and 3,650 meters (10,000 and 12,000 feet), a few ranging a little above and below these limits in favorable places along cañon slopes. I found them equally numerous in the heavy grass on cañon slopes and hill-sides and in the dense growth of grass about the sides of the small park-like openings in the forest. They make their forms within the matted bases of the huge grass tussocks by tunneling passageways along the surface of the ground through the mass of old grass leaves and stems and then hollowing out snug retreats within the weather-proof shelters thus obtained. Their concealed runways were intermingled with those of the common meadow mice of the mountains, and the striking resemblance in coloration and habits between the two animals was remarkable. Like the arvicolas, the rabbits are mainly nocturnal, but are occasionally found moving about by day. They become more active just at dusk, and on frosty mornings sometimes come out at sunrise into the small openings among the grass to bask in the warmth. My Indian hunters claimed that they often found them out sunning themselves in this way on summer afternoons after cold, heavy showers.

“This species has practically no external tail, though in some specimens there is a small fleshy papilla two or three millimeters in length; in others even this is absent. In this respect the animal resembles the pikas (*Lagomys*).”

Animals differing so widely in habits and manner of progression as the present species and the ordinary rabbits would be expected to differ in their skeletons. Fortunately, Mr. Nelson preserved a perfect skeleton of the new rabbit, which on comparison with those of the several subgenera of *Lepus* shows differences of considerable morphologic weight.

The clavicle is complete and articulates directly with the sternum (fig. 33)—a thing that never happens in the genus *Lepus*. Huxley describes the clavicle of the rabbit as “incomplete at both ends,” and Flower states that it “is very short and is suspended by long ligaments between the scapula and the sternum.” The manubrium or presternum is broadly expanded

between and anterior to the articulation of the first pair of ribs (fig. 33), a condition unknown in the genus *Lepus*, in which it is always long and narrow (fig. 34). Flower calls attention to the correlation existing between the form of the presternum and the degree of development of the clavicle, stating that “the presternum is compressed and produced forwards in those rodents in which the clavicle is absent or rudimentary,” as the hares, and “is generally broad in the forms which have the clavicle well developed, as the rats, beavers, &c.” This interesting correlation is well exemplified in the Popocatepetl rabbit, which, having a complete clavicle, has also a broad manubrium. The segments of the mesosternum (between the presternum and xiphoid) are only three in number (fig. 33), while in all the subgenera of *Lepus* the number is four (fig. 34). The ribs are correspondingly reduced, only six pairs instead of seven articulating with the sternum. The tubercles of the ribs are not produced into spiniform processes, as in *Lepus*, and disappear in the sixth pair. In *Lepus* they extend to the eighth pair. The scapula is rather narrow, with a long metaacromial process, as in *Lepus*. There are four sacral vertebræ, as in *Lepus* (the first and anterior part of the second articulating with the ilia), and nine

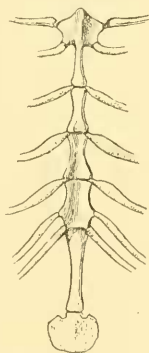


FIG. 33—Sternum of *Romerolagus nelsoni* (nat. size).

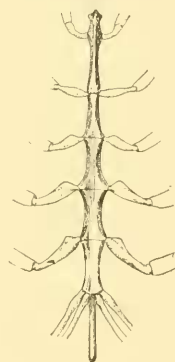


FIG. 34—Sternum of *Lepus timidus* (much reduced).

caudal vertebræ, the last three of which are upturned and rudimentary.

The fifth cervical vertebra is peculiar. Its transverse process projects directly outward instead of backward, and its inferior lamella has only a trace of the posterior extension usual in rabbits. The metapophyses begin on the tenth dorsal vertebra and are present in all the succeeding vertebræ to the last lumbar, inclusive. The anapophyses are much as in *Lepus* proper, being present, though small, on the ninth to twelfth dorsals, inclusive, and on all the lumbar vertebræ except the sixth and seventh. The transverse processes of the lumbar vertebræ are peculiar, each developing a broad posterior flange, which extends the full length of the side of the vertebra. Hypopophyses are present on the first, second, and third lumbar vertebræ, as in *Lepus*, though relatively short.

The bones of the legs and feet show a number of more or less important differences, some of which may be mentioned here. The depression on the inner side of the trochlear facet of the humerus is small and flat instead of deeply sulcate; the fibular malleolus is less strongly developed; the navicular bone differs materially in form and its inferior crest is conspicuously shorter than in *Lepus*, and does not reach forward beneath the bases of the metatarsals.

The skull, singularly enough, does not show the departure from *Lepus* that one would expect from a study of the other bones. It agrees in the main with skulls of the American cottontails (subgenus *Sylvilagus*), but differs in the postorbital processes, which are small, divergent posteriorly, and altogether wanting anteriorly, and in the jugal, which is greatly elongated posteriorly. The interparietal is distinct, and in old age becomes ankylosed with the supraoccipital. The thoroughly leporine character of the skull shows that the animal can hardly be regarded as ancestral to *Lepus*, as might have been inferred from its short ears, short hind legs, and various skeletal characters, but that it is a specialized offshoot from the genus *Lepus* itself.

The taxonomic value of the characters which serve to distinguish the Popocatepetl rabbit from the true rabbits, and more particularly the peculiarities of its sternum and clavicle, require the erection of an independent genus for its reception. Heretofore the genus *Lepus* has enjoyed the distinction of coincidence in characters with the family to which it belongs. Now the

family circle of the Leporidae must be extended to include the new member.*

From the foregoing it will be evident that the new animal is of unusual interest to naturalists. The curious combination of its anatomical characters, the peculiarity of its mode of locomotion, the oddity of its habits, and the isolation of its home—high up on lofty Popocatepetl—give it an interest quite apart from that which attaches to most new discoveries. For this reason it affords me special pleasure to bestow upon the new and remarkable genus, of which it is the type, the name *Romerolagus*, in honor of the venerable Señor Don Matias Romero, Envoy Extraordinary and Minister Plenipotentiary from Mexico, as a slight token of appreciation for the active interest he has taken in the explorations of the United States Biological Survey in Mexico, and in recognition of the many courtesies he has extended to our field naturalists during the past five years. ✓

ROMEROLAGUS gen. nov.

Type.—*Romerolagus nelsoni* sp. nov., from Mt. Popocatepetl, Mexico.

Diagnosis.—Size small; ears exceedingly short, shorter than in any known species of *Lepus*; hind legs and feet short; skull much as in *Lepus* (subgenus *Sylvilagus*), except that the postorbital processes are small, divergent, and wanting anteriorly, and the jugals much elongated posteriorly; clavicle complete and articulating with both sternum and scapula; presternum broadly expanded anteriorly, much broader than long in front of first pair of ribs [narrow and slender in *Lepus*]; mesosternum of 3 segments [4 in *Lepus*]; 6 pairs of ribs articulating with sternum [7 pairs in *Lepus*]; transverse process of 5th cervical vertebra directed straight outward (instead of backward), its inferior lamella lacking the usual posterior extension; transverse processes of all lumbar vertebrae broadly expanded, their bases covering entire length of vertebrae; hypophyses present on first 3 lumbar vertebrae, but small; inferior crest of navicular bone short and not produced under base of metatarsal.

Romerolagus nelsoni sp. nov. Popocatepetl Rabbit.

Type from Mt. Popocatepetl, Mexico (altitude 3,350 meters or 11,000 feet). No. 57949, ♂ ad., U. S. Nat. Mus., Dept. Agric. coll. Collected Jan. 6, 1894, by E. W. Nelson and E. A. Goldman. Original number 5639.

Geographic distribution.—Boreal Zone of Mt. Popocatepetl, between the altitudes of 3,050 and 3,660 meters (10,000–12,000 feet).

* It is singular that of the four characters given by Flower and Lydekker in the first sentence of their diagnosis of the family Leporidae ("imperfect clavicles, elongated hind limbs, short recurved tail, and long ears"), not one applies to the Popocatepetl rabbit.

General characters.—Size small; ears and hind feet very short; no external tail; coloration dark.

Color.—Upper parts, sides, and pectoral collar grizzled grayish brown, with a yellowish suffusion, and strongly mixed with black-tipped hairs (the yellowish due to a broad subapical zone of this color on each hair); belly and chin smoky grayish washed with buffy; upper surfaces of feet buffy yellowish, much lighter than rest of upper parts; ears without markings.

Cranial characters.—Skull similar in a general way to that of *Lepus sylvaticus*, but much smaller; supraorbital processes small, slender, divergent, and not approaching frontals posteriorly; jugals much elongated and incurved posteriorly, not defined anteriorly (supraorbital notch absent); braincase less decurved and more depressed posteriorly than in *Lepus sylvaticus* and its allies; zygomata standing far out from sides of cranium; palatal bridge relatively broad; auditory bullæ moderately inflated.

Measurements.—Type specimen: total length, 311; tail vertebrae, 0; hind foot, 53; ear from notch in dry skin, 36. Average of 6 adults from type locality: total length, 295; hind foot, 52. The type is the largest of the seven specimens.

Remarks.—Mr. Nelson's account of the habits of this rabbit, as observed by him on Mt. Popocatepetl, has been given at the beginning of the present article. Mr. Nelson saw runways which he believes were those of the same species, at an altitude of 3,050 to 3,350 meters (10,000 to 11,000 feet) on the southeast side of Mt. Iztaccihuatl.